

## REMARKS

### **I. Introduction**

Applicants would like to thank Examiner Le for the indication of allowance of claims 4, 5, 9-12 and 16-19. In response to the Office Action dated October 15, 2004, Applicants have amended claims 3, 8 and 15 so as to address the pending rejection under 35 U.S.C. § 112, second paragraph. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

### **II. The Rejection Of Claims 3, 8 and 15 Under 35 U.S.C. § 112, Second Paragraph**

Claims 3, 8 and 15 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of the elements.

Specifically, the Examiner asserts that the rejected claims recite third and fourth inverters, and fifth and sixth transistors, while claims 1, 6 and 13, for which the rejected claims depend, do not recite any inverter or transistor. In response, Applicants have amended claims 3, 8 and 15 to recite a first inverter, a second inverter, a first transistor and a second transistor. It is respectfully submitted that the pending rejections under 35 U.S.C. § 112, second paragraph, have been overcome in view of the foregoing amendments.

### **III. The Rejection Of Claims 1, 6 and 13 Under 35 U.S.C. § 102**

Claims 1, 6 and 13 are rejected under 35 U.S.C. § 102 as being anticipated by USP No. 5,936,879 to Brouwer. Applicants respectfully traverse this rejection for at least the following reasons.

***Claim 1***

Claim 1 recites a non-volatile memory cell comprising a first ferroelectric capacitor which connects the second data input/output line to the first node, and a second ferroelectric capacitor which connects the first data input/output line to the second node.

In accordance with one exemplary embodiment of the present invention, the first ferroelectric capacitor 8a connects the second data input/output line 3 to the first node 6, while the second ferroelectric capacitor 8b connects the first data input/output line 2 to the second node 7 (see, e.g., Fig. 1). As a result, the present invention advantageously provides a non-volatile memory cell which enables stable flip-flop operation.

In the pending Office Action, the Examiner asserts that the node intersecting the transistor 11 and the ferroelectric capacitor 16 of Brouwer corresponds to the claimed first node, the node intersecting the transistor 12 and the access transistor 15 of Brouwer corresponds to the claimed second node, the ferroelectric capacitor 17 of Brouwer corresponds to the claimed first ferroelectric capacitor, and the ferroelectric capacitor 16 of Brouwer corresponds to the claimed second ferroelectric capacitor.

However, in doing so, the ferroelectric capacitor 17 of Brouwer is **NOT** connected to the data-bar (/DATA) path 20, and the ferroelectric capacitor 16 of Brouwer is **NOT** connected to the data path (DATA) 19. Indeed, contrary to the conclusion set forth in the pending rejection, Brouwer discloses that the ferroelectric capacitor 17 connects the alleged second node to the node intersecting the ferroelectric capacitor 16 and the buffer amplifier circuit 22, while the ferroelectric capacitor 16 connects the alleged first node to the node intersecting the ferroelectric capacitor 16 and the buffer amplifier circuit 22.

Even assuming *arguendo* that the claimed first ferroelectric capacitor corresponds to the ferroelectric capacitor 16 and not to the ferroelectric capacitor 17, and the claimed second ferroelectric capacitor corresponds to the ferroelectric capacitor 17 and not to the ferroelectric capacitor 16, the memory cell of Brouwer is inconsistent with the circuit configuration (e.g., the first ferroelectric capacitor connects the second data input/output line to the first node, or the second ferroelectric capacitor connects the first data input/output line to the second node) set forth by the claim language recited by claim 1. Thus, for at least these reasons, Brouwer does not disclose or suggest the claim elements recited by claim 1.

***Claim 6***

Claim 6 recites a non-volatile memory cell comprising: 1) a first ferroelectric capacitor and a second ferroelectric capacitor select element which are serially connected between the second data input/output line and the first node, 2) a second ferroelectric capacitor and a first ferroelectric capacitor select element which are serially connected between the first data input/output line and the second node, 3) the first ferroelectric capacitor being connected to the first node, and 4) the second ferroelectric capacitor being connected to the second node.

In accordance with one exemplary embodiment of the present invention, the first ferroelectric capacitor 8a and a second ferroelectric capacitor select element 22 are serially connected between the second data input/output line 3 and the first node 6, while the second ferroelectric capacitor 8b and the first ferroelectric capacitor select element 21 are serially connected between the first data input/output line 2 and the second node 7, such that the first ferroelectric capacitor 8a is connected to the first node 6, and the second ferroelectric capacitor

8b is connected to the second node 7. As a result, the present invention advantageously provides a non-volatile memory cell which enables stable flip-flop operation.

However, for at least the reasons discussed above with respect to claim 1, as readily shown in Fig. 2, Brouwer does not disclose or suggest that the ferroelectric capacitor 17 is connected to the node intersecting the transistor 11 and the ferroelectric capacitor 16 (alleged first node). Brouwer is also silent with regard to connecting the ferroelectric capacitor 16 to the node intersecting the transistor 12 and the access transistor 15 (alleged second node).

Additionally, Brouwer does not appear to discuss or recognize any ferroelectric capacitor select element. Indeed, the Examiner has not identified which elements of Brouwer correspond to the claimed first ferroelectric capacitor select element and second ferroelectric capacitor select element. If the Examiner continues to maintain the pending rejection in the Office Action, it is respectfully requested that the Examiner specifically identify where in Brouwer the claimed ferroelectric capacitor select elements are disclosed.

Thus, for at least these reasons, Brouwer does not disclose or suggest the claim elements recited by claim 6.

### ***Claim 13***

Claim 13 recites a non-volatile memory cell comprising: 1) a second ferroelectric capacitor and a first ferroelectric capacitor select element which are serially connected between the second node and a third node, the third node serially connecting the first switching element and the first control element, 2) a first ferroelectric capacitor and a second ferroelectric capacitor select element which are serially connected between the first node and a fourth node, the fourth node serially connecting the second switching element and the second control element, 3) the

first ferroelectric capacitor being connected to the first node, and 4) the second ferroelectric capacitor being connected to the second node.

In accordance with one exemplary embodiment of the present invention, the second ferroelectric capacitor 8b and the first ferroelectric capacitor select element 21 are serially connected between the second node 7 and the third node 9, the third node 9 serially connecting the first switching element 4 and the first control element 31, and the first ferroelectric capacitor 8a and the second ferroelectric capacitor select element 22 which are serially connected between the first node 6 and the fourth node 10, the fourth node 10 serially connecting the second switching element 5 and the second control element 32, such that the first ferroelectric capacitor 8a is connected to the first node 6 while the second ferroelectric capacitor 8b is connected to the second node 7. As a result, the present invention advantageously provides a non-volatile memory cell which enables stable flip-flop operation.

However, at a minimum, Brouwer is silent with regard to any control element or ferroelectric capacitor select element, let alone the specific circuit configuration set forth by the claim language as is recited by claim 13. The Examiner also has not identified which elements of Brouwer correspond to the claimed third node and fourth node so as to arrive at the claimed invention. Thus, for at least these reasons, Brouwer does not disclose or suggest the claim elements recited by claim 13.

Accordingly, as anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and at a minimum, Brouwer fails to disclose or suggest the foregoing claim elements, it is clear that Brouwer does not anticipate claim 13 or any of the claims dependent thereon.

**IV. The Rejection Of Claims 2, 7 and 14 Under 35 U.S.C. § 102**

Claims 2, 7 and 14 are rejected under 35 U.S.C. § 102 as being anticipated by USP No. 6,141,237 to Eliason. However, Applicants respectfully submit that the Examiner's rejection is improper, because claims 1, 6 and 13, for which dependent claims 2, 7 and 14 depend, are rejected under 35 U.S.C. § 102(b) as being anticipated by USP No. 5,936,879 to Brouwer. As such, the pending rejections to claims 2, 7 and 14 should not be rejected under 35 U.S.C. § 102, but under 35 U.S.C. § 103. Nonetheless, claims 2, 7 and 14 are dependent upon claims 1, 6 and 13, respectively, and hence, distinguish over the prior art for reasons previously argued with respect to claims 1, 6 and 13. Thus, the patentability of claims 2, 7 and 14 are respectfully advocated based upon the limitations expressed therein.

**V. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claims 1, 6 and 13 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

**VI. Conclusion**

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

Application No.: 10/829,235

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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